

Final Report

**Benthic Macroinvertebrate Community Survey of the Calcasieu
Estuary (Louisiana)**

EPA Contract No. 68-W5-0022

Submitted to

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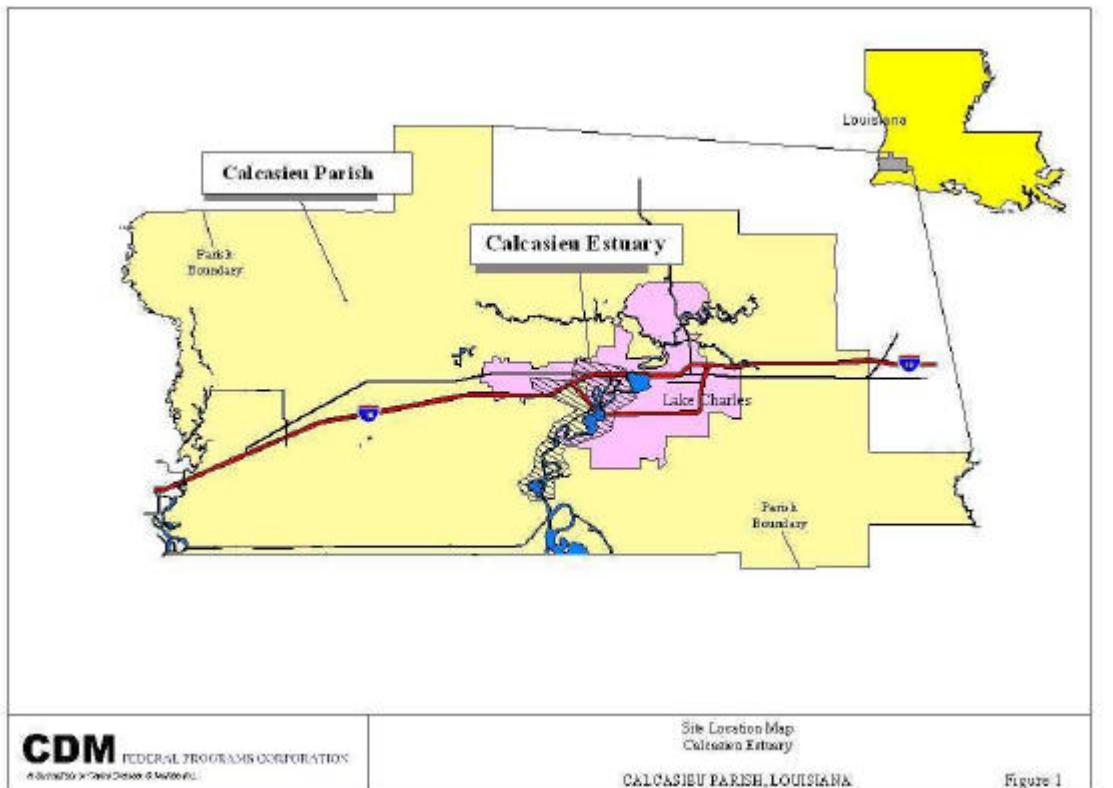
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INTRODUCTION

The Calcasieu Estuary is located in southwest Louisiana between the cities of Westlake and Mossville, and west of Lake Charles in Calcasieu Parish, Louisiana (Figure 1). Headwaters of the Calcasieu River, Bayou Verdine and Bayou d'Inde originate in the farmland north of Mossville and flow primarily south-southeast entering the Calcasieu River on the north end of Coon Island Loop.



Macrobenthic organisms play an important role in estuaries. They alter the geophysical condition of sediments, promote decomposition and nutrient cycling, and facilitate transfer of energy among food webs (*vide* Brown et al. 2000). Their general sessile nature, variable sensitivity to contaminants, and relative longevity in the sediments make them good indicators of environmental condition. As a result, macrobenthos were selected as the biological subject of study for this component of the investigation (MacDonald et al. 2000).

This macrobenthic study is part of a multidisciplinary investigation of the Calcasieu Estuary (Calcasieu and Cameron Parishes, Louisiana). The other areas of investigation concern related biological, toxicological, physical, and geochemical analyses of the region, with emphasis on variables associated with contaminant distributions.

The macrobenthic communities of the Calcasieu River and its waterways have received the attention of many investigators over the past 20 years, due in part to the potential for contaminant effects in the area. The Calcasieu watershed has been developed by numerous municipal, industrial, and agricultural interests. The waterways (bayous, lakes, canals, and

river) are used extensively for transportation, recreation, commercial and sports fisheries, industrial-water uptake and effluent, and waste discharge. The economic development of the region since the 1940s is based primarily on energy-related activities. Petro-chemical interests led the way to extensive industrial development along the Calcasieu River, where industries take advantage of the abundant water supply and availability of crude oil and natural gas in the region. Population growth in the cities of Lake Charles (east of the river) and Sulphur, Westlake, and Maplewood (to the west) has added to the burden on the watershed in recent years (DeRouen and Stevenson 1987).

Previous research established that contaminant effects had occurred on the macrobenthic communities of the Calcasieu Estuary (DeRouen and Stevenson 1987, Gaston and Nasci 1988, Gaston and Young 1992). These investigators described the macrobenthic communities and habitats, and provided a baseline for comparison with the present study. Recent investigations of northern Gulf of Mexico estuaries by Rakocinski et al. (1997, 2000), Gaston et al. (1998), and Brown et al. (2000) provided techniques (based on multivariate analyses) to assess the relationships among Gulf of Mexico estuarine macrobenthic communities and gradients of environmental variables and contaminants. These techniques were used to analyze data collected for this study and make predictions concerning contaminant effects on macrobenthic communities.

This study was conducted to assess the status and trends of benthic macroinvertebrate communities in the Calcasieu Estuary and involved the following steps:

1. Stations were separated into experimental and reference groups to facilitate comparisons of results among contaminated and reference regions.
2. Macrofauna organisms were identified to the lowest possible taxon so that biological criteria could be used to assess the area for contaminant related effects.
3. A data matrix of organisms by station and group (using count data) was established to facilitate statistical analyses of the data.
4. Indicator species were used to establish an **index of contamination**. This index was used to predict likelihood of metal and organic contamination at each site and region.

METHODS

Sample Collection and Handling

The location of the sampling stations was determined using a systematic-stratified random sampling design (Gilbert 1987). The benthic sampling stations were distributed in a manner that provided broad geographic coverage of the study area and the data necessary to evaluate the possible toxicological significance of chemical concentrations in sediments. Also considered in the sampling design was the distribution of sediment with various chemical characteristics. Sediment chemistry data from the previous sampling event was evaluated using mean Effects Range-Median Quotients (ERM-Q, Long and MacDonald 1998). In addition, the sampling design ensured sample locations were relatively evenly distributed within four categories of sediment chemistry (i.e., mean ERM-Qs of <1.0, 0.1 to 0.5, 0.5 to 1.5 and >1.5: n ?20 samples within each category, Table 1).

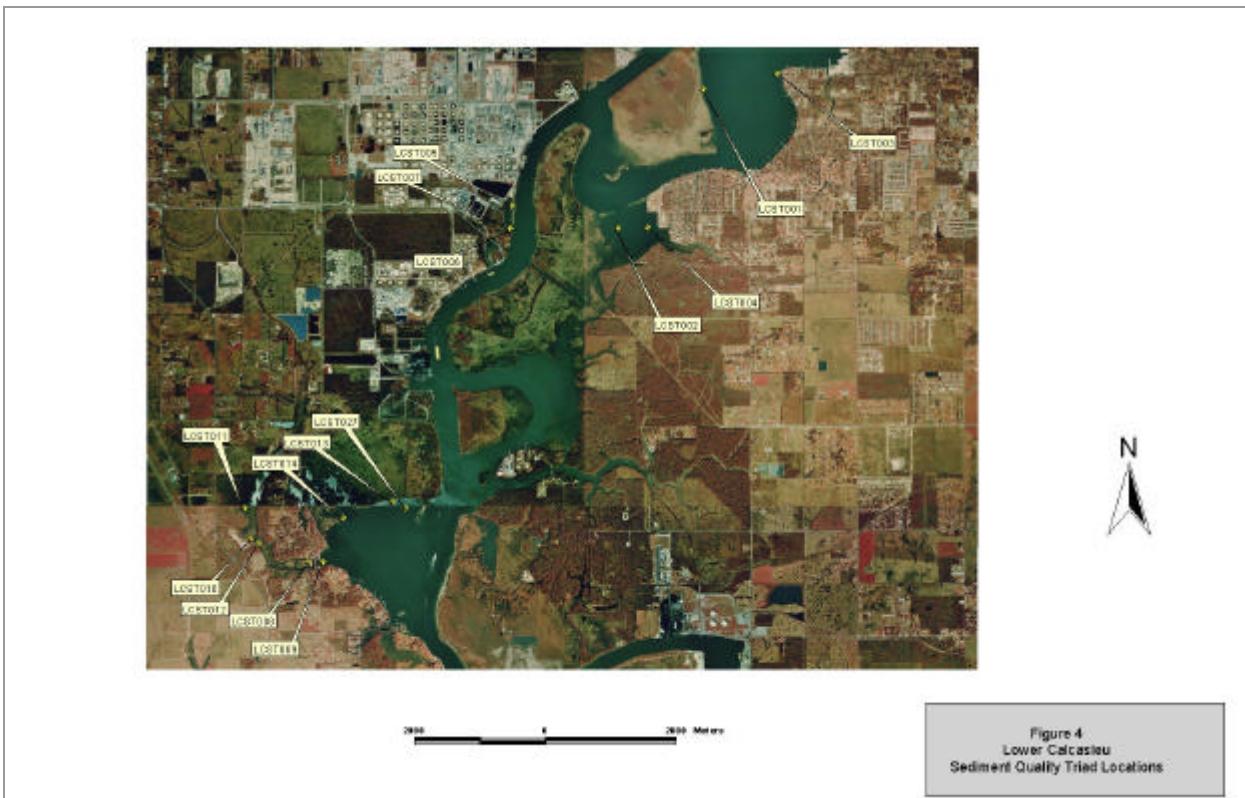
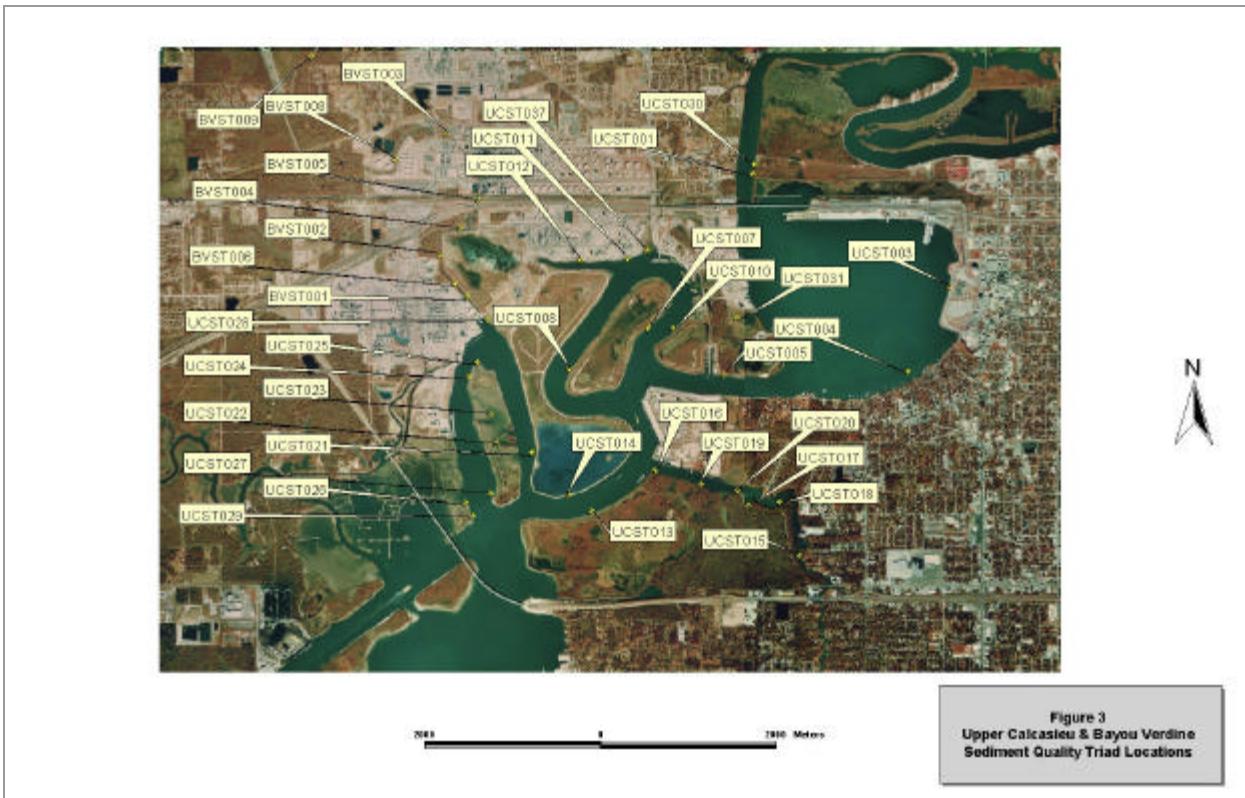
All sample locations were designated with Universal Transverse Mercator (UTM) coordinates prior to field sampling. The locations of the sampling stations are provided in Figures 2, 3, 4, 5, and 6. A Trimble Navigation Limited⁷ differential Global Positioning System (GPS) receiver and base station was used to navigate to the predetermined sample stations. Water quality parameters were measured at each sample station before the benthic samples were collected.

Macrobenthic samples were collected during November and December 2000 from 101 stations (Table 2) in the Calcasieu River Ecosystem (Calcasieu Parish and Cameron Parish, Louisiana) as part of a research project to determine effects of contaminants on the estuarine ecosystem. Five replicate samples were collected at each station, providing a total of 505 samples. Sediment samples were collected with a 529 cm² (23 X 23 cm) Ekman grab. Macrobenthic samples were taken from within the grab sample using a 35.4-cm² core, as were additional samples for contaminants and geophysical characteristics of the site.

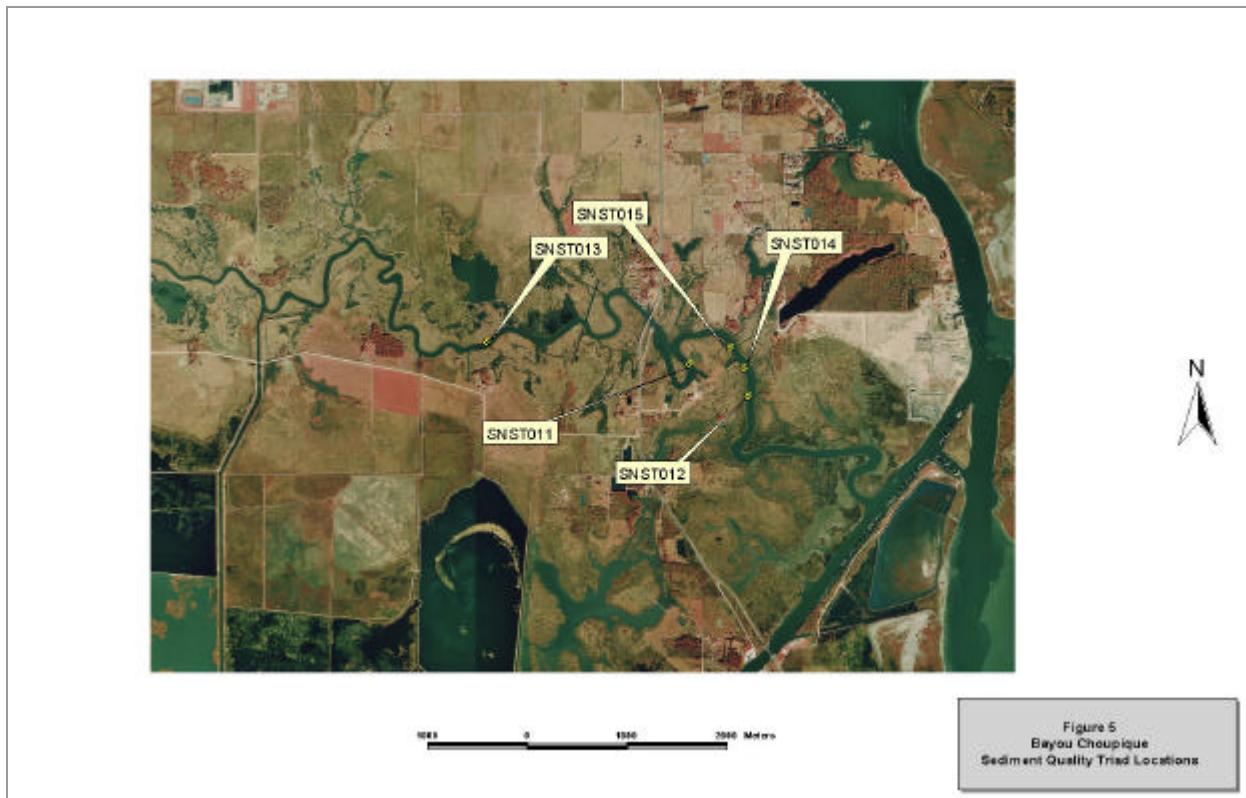
Organisms were washed free of fine sediments on a 500-micron (0.5 mm) sieve and preserved in the field (Lake Charles, Louisiana) with formalin (10%), shipped to the University of Mississippi (Oxford, Mississippi), and stored until laboratory analyses began. Laboratory analyses included staining of the organisms with Rose Bengal (see below), rinsing of the macrobenthic samples on a 500-micron (0.5 mm) sieve to remove formalin and any remaining fine sediment, sorting to major taxa, and identifying the organisms. The rinsing procedure involved washing each sample through two sieves (a 5-mm sieve stacked on a 0.5-mm sieve) with fresh water. In this manner, the sample was washed free of formalin preservative, and the coarse and fine fractions of material were separated. All fine material that did not pass through both sieves was concentrated on the 0.5-mm sieve. The coarse material, such as leaf litter, twigs, and clay lumps, was



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concentrated on the large sieve. Many samples contained no coarse material, and thus necessitated only a 500-micron sieve for rinsing. Material retained on the sieves was placed in sorting dishes (in tap water) and examined under stereo microscopy (Swiss Wild M5A microscope with a dark-field base), where organisms were identified. All of the macrobenthic organisms collected were identified to the lowest possible taxon, generally species. Some specimens required viewing under compound microscopy for species-level identification. These specimens were placed under glass and viewed with a Leitz Dialux microscope (magnification up to 1000X). Enumeration of macrofaunal organisms was accomplished by direct counts ("tick marks") on data sheets or cumulative counts on a tally meter (a Denominator). Organisms identified were stored (by replicate sample) in a container of 70% ethanol labeled with station number, replicate, and date of collection. Data were transferred to computer files (Microsoft Excel spreadsheet) by Dr. Gaston. A reference (voucher) collection of the taxa collected was maintained to ensure taxonomic standardization during the study.

Quality Assurance Plan

The Benthic Ecological Laboratory at the University of Mississippi was one of the first laboratories in the United States to begin using Quality Assurance (QA) and Quality Control (QC) for estuarine macrobenthic analyses. The sampling handling and sample transfer procedures used at the laboratory led to completion of a guidance document for other laboratories conducting EPA-EMAP work, as described in Summers et al. (1992). These procedures are referred to below as "EPA-EMAP protocol". A second publication was consulted for QA/QC procedures as well. It was produced for the Puget Sound region (Puget Sound Water Quality Authority 1987). These procedures are referred to below as "Puget Sound protocol".

In this study, the EPA-EMAP protocol was adhered to with the following exceptions:

- ☒ Organisms were stained with Rose Bengal as a vital stain, a standard practice that improves sorting efficiency.
- ☒ Although the EPA-EMAP protocol called for a 10% resort of the sample, most of the samples were relatively small (and many were washed completely free of mud on the sieve), and thus required no sorting to major taxa. Organisms were identified as they were removed during the first handling (under microscopy). As such, they could not be re-sorted.
- ☒ The EPA-EMAP protocol of 90% efficiency for sorting and taxonomic identifications was used. Every 10th sample was analyzed again, including complete analysis of the sediment, and re-identification and counting of organisms. No more than 5% of the organisms in a given sample were missed by the sorters.
- ☒ Biomass was not measured during this study, so QC guidelines for biomass (in the Puget Sound protocol) were not pertinent.
- ☒ None of the equipment used in this study-required calibration, so QC guidelines for calibration (in the Puget Sound protocol) were not pertinent.
- ☒ A reference collection for this study, but it did not include every species encountered. A large reference collection was maintained in the laboratory, including a collection from the region of Louisiana included in this study. Taxonomists in the laboratory had easy access to those specimens and used the collection for comparisons during the study. Because of the ready access of this collection, common benthic species were not removed from the samples

for reference material. "Common species" included species characteristic of estuaries in the region. "Reference specimens" were limited to species that were rare or uncommon and likely to be questioned by taxonomic authorities. Sample containers are archived by station, so that it would be easy to retrieve additional specimens of any species should identifications be questioned.

Dr. Gary Gaston served as the senior taxonomic expert for the laboratory. Ms. Carol Cleveland was the QA/QC officer and supervisor for the laboratory. She conducted re-sorts and confirmations (10% of all samples identified) of Dr. Gaston's taxonomic work and vice versa.

QA/QC Personnel

Dr. Gary Gaston is Director of the Benthic Ecology Laboratory. Dr. Gaston is responsible for the overall activities of the laboratory and serves as the primary contact for funded projects. Dr. Gaston has over 20 years of experience in the field of benthic ecology, and is an authority on the taxonomy, trophic biology, and physiology of marine benthos.

Ms. Carol Cleveland is a Research Associate for the Benthic Ecology Laboratory. Ms. Cleveland has experience with laboratory analyses of marine and estuarine macroinvertebrate specimens dating back to 1992, including experience with macrobenthic fauna of the East Coast and Gulf of Mexico coasts of the United States. Ms. Cleveland is especially familiar with the taxonomy of polychaetes and molluscs, and with laboratory quality assurance/quality control procedures.

Analysis Methods

Macrofauna were assigned to categories so an **index of contamination** could be calculated. These categories resulted from canonical correspondence analysis (CCA) using principal components analysis (PCA) factors during previous studies of the region under funding by the EPA Environmental Monitoring and Assessment Program for Estuaries (EMAP-E) for the Lousianian Province. Categories for the index were originally published by Rakocinski et al. (1997), and used in subsequent publications by Gaston et al. (1998), Brown et al. (2000), and Rakocinski et al. (2000). Rakocinski et al. (1997) used eight natural variables and 13 contaminant variables to assess distribution patterns of macrofauna in Gulf of Mexico estuaries. Leading variables representing primary natural gradients included near-bottom salinity, water depth (m), and percent silt/clay (Rakocinski et al. 1997). Many of the contaminant-related variables represented concentrations (mg/g dry weight) of individual trace metals, including nickel, chromium, tin, zinc, lead, mercury, and arsenic (Ni, Cr, Sn, Zn, Pb, Hg, As). Copper, silver, and cadmium (Cu, Ag, Cd) were excluded from analyses *a-priori*, because their concentrations always occurred well below recognized 10% biological effects threshold levels (Long and Morgan 1990). The remaining contaminant variables were treated as composite measures, including total alkanes, total polychlorinated biphenyls (PCBs), total low molecular weight polynuclear aromatic hydrocarbons (PAHs), high molecular weight polynuclear aromatic hydrocarbons (PAHHs), total dichlorodiphenyltrichloroethane (DDTs), and total chlorinated compounds (CHLs). Rakocinski et al (1997) used these multivariate techniques to identify interrelated suites of environmental variables representing complex environmental factors and to identify species characteristic of each set of factors (indicator

species). In this study the benthic macroinvertebrate species were assigned to one of six categories using Rakocinski et al. (1997) classification design.

The six categories of benthic indicators were low metals and low organic contaminants (L/L), medium metals and low organics (M/L), medium metals and medium organics (M/M), medium metals and high organics (M/H), high metals and medium organics (H/M), and high metals and high organics (H/H). These multivariate analyses provided a dispersion pattern of species coordinates and corresponding contaminant vectors, which allowed us to classify species as prospective indicators of various contaminant levels. It is important to note that the original analyses (Rakocinski et al. 1997) were conducted on data collected in estuaries across the entire northern Gulf of Mexico, of which the current investigation is a subset, but the areas sampled during the two studies (and the data sets that resulted) had no sites in common, unless by coincidence.

The index of contamination values were calculated in several steps. Organisms were assigned to category (Table 3). The abundance data in each category were totaled (by station, region, or other spatial category). That number was divided by the number of replicates (to attain a mean number for that location). A percentage of abundance then was calculated for each category at each site. This value was useful as a reference to percentage of the total organisms that were indicative of six levels of contamination.

(i.e., $G = \sum_i a_i p_{ij}$ |, where S is the spatial category, a_i is the level of contamination factor, p_{ij} is the proportion of organisms assigned to the index of contamination category i and the number of species in the index of contamination category j.)

The index of contamination value was determined by multiplying the mean (abundance) by a factor (1 to 6), depending on the level of contamination. The lowest indicated level of contamination (L/L) was multiplied by 6, M/L by 5, and so forth to the highest indicated level of contamination (H/H), which was multiplied by 1. This gave higher values to less contaminated sites and provided a spread of values based on both number of individuals and contaminant level.

Macrobenthic data were also summarized by abundance (by taxonomic group) and percentage of abundance (Table 4). This provided a quick reference to numerous metrics of the biological data. Summary data by site (station groups) are provided for station mean abundance, standard deviation of abundance data, and site index of contamination values (Table 5).

RESULTS AND DISCUSSION

Estuaries of southwestern Louisiana may be characterized as vertically well mixed, with wide annual salinity fluctuations, weak tidal flushing, fine sediments (often approaching 100% silt/clay content), and widespread low oxygen of bottom waters during warm months (Gaston and Nasci 1988). Macrofaunal density of the region is typically modest by comparison with U.S. East-coast estuaries (e.g., Chesapeake Bay, Delaware Bay, Raritan Bay) and larger estuaries of

the Gulf of Mexico (e.g., Mobile Bay, Galveston Bay). As is characteristic of macrobenthos, diversity and density values vary with numerous metrics, particularly natural environmental gradients and sediment contamination (Rakocinski et al. 2000).

There were 3408 macrobenthic organisms identified during the present study, distributed among 62 taxa (Table 4). Most of the organisms were annelids (26 taxa; 77.8% of the specimens) and arthropods (22 taxa; 11.3% of the specimens). Only 11 taxa of molluscs were collected (7.7% of the specimens). No echinoderms were collected. Nemerteans, hydroids, and urochordates made up the remaining organisms (3.3%). The species list (Table 3) closely resembled one reported for the region by Gaston and Nasci (1988), following their study 15 years earlier, and is characteristic of the fauna that inhabit upper reaches of Louisiana estuaries (Gaston 1999).

Abundance data for this study were comparable to values reported for the region by previous investigators (Gaston and Nasci 1988, Gaston and Young 1992). By station, total abundance ranged widely in the current study (Table 5). For instance, many of the samples from Bayou d'Inde had no organisms or very low mean total abundance per site, while one station on that

bayou supported 4258 organisms/0.5 m²). Gaston and Young (1992) also reported that many sites in Bayou d'Inde devoid of macrofauna. They also collected fewer organisms in Bayou d'Inde than elsewhere (Bayou Verdine and Contraband Bayou).

Densities of macrobenthos on Contraband Bayou in this study averaged 376 organisms/0.5 m². Previous studies (Gaston and Nasci 1988; Gaston and Young 1992) reported 270 macrobenthic organisms/ 0.5 m² in Contraband Bayou. Total abundance for middle and lower Bayou d'Inde averaged 443/ 0.5 m² (previous study = 156/ 0.5 m²). Macrofauna of lower Bayou Verdine averaged 743/ 0.5 m² (previous study = 226/ 0.5 m²). It should be mentioned that these data (current and previous studies) were not collected at the same sites.

Highest densities of macrobenthos occurred at reference sites (Choupique Bayou = 2267/0.5 m²; Johnson Bayou = 2651/0.5 m²) and Moss Lake (3140/0.5 m²), Prien Lake (2207/0.5 m²), upper Calcasieu River – Clooney Island to Coon Lake (2059/0.5 m²), and lower Bayou d'Inde – LBI9 (2049/0.5 m²). Previous investigations of Choupique Bayou reported densities of 1326/0.5 m² (Gaston and Nasci 1988). Gaston and Nasci sampled primarily in the salt-marsh creeks of lower Choupique Bayou, whereas the current study had more sites along intermediate marshes and adjacent to upland areas. The previous study did not sample in Johnson Bayou, Prien Lake, or Moss Lake.

Lowest densities of macrobenthos occurred in lower Bayou d'Inde – LBI 6 (0 organisms/0.5 m²), upper Bayou d'Inde – UBI 1 (56/0.5 m²), lower Bayou d'Inde – lower PPG canal (130/0.5 m²), and a reference site in Grand Bayou (141/0.5 m²)

The **index of contamination** (Table 5) was assessed by region to make predictions of likelihood of contaminant effect on macrobenthic communities. Lowest values for the **index of contamination** (indicating a likelihood of contaminant effect) occurred in Contraband Bayou (3.2), upper Bayou d'Inde – UBI 1 (0.8), middle Bayou d'Inde – MBI 3 (1.4), and sites on lower Bayou d'Inde – LBI 1 (1.7), LBI 3 (1.1), lower PPG canal (1.0), middle Calcasieu River – Citgo

Surge Pond (2.5), Bayou Bois Conine (2.6), and Grand Bayou (1.1). Most of these sites supported very few organisms.

Highest values for the **index of contamination** (indicative of low levels of contamination) occurred at reference sites on Johnson's Bayou (38.5) and Choupique Bayou (22.8), Moss Lake (41.1), and Prien Lake (37.1). Most of these sites supported a moderate diversity of species and relatively high abundances of macrobenthos.

SUMMARY AND CONCLUSIONS

1. Macrobenthic species and densities collected during the present study closely resembled those reported for the region by Gaston and Nasci (1988), following their study 15 years earlier. These taxa are characteristic of the fauna that inhabit upper reaches of Louisiana estuaries.
2. Densities of macrobenthos ranged widely among stations in the current study, even among closely located stations. Densities at Bayou d'Inde ranged from 0 organisms at some sites to one station that supported 4258 organisms/0.5 m².
3. Highest densities of macrobenthos occurred at reference sites (Choupique Bayou; Johnson Bayou), Moss Lake, Prien Lake, upper Calcasieu River – Clooney Island to Coon Lake, and one region of lower Bayou d'Inde – LBI9.
4. Lowest densities of macrobenthos occurred in lower Bayou d'Inde – LBI 6 (completely devoid of macrobenthos), upper Bayou d'Inde – UBI 1, lower Bayou d'Inde – lower PPG canal, and a reference site in Grand Bayou.
5. **Index of contamination** values indicated the lowest probability of contamination occurred at reference sites on Johnson's Bayou and Choupique Bayou, Moss Lake, and Prien Lake.
6. The greatest probability of contaminant-related effect (according to low values of the **index of contamination**) occurred in Contraband Bayou, upper Bayou d'Inde – UBI 1, middle Bayou d'Inde – MBI 3, and sites on lower Bayou d'Inde – LBI 1, LBI 3, lower PPG canal, middle Calcasieu River – Citgo Surge Pond, Bayou Bois Conine, and Grand Bayou.

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APPENDIX 1

TABLES

Table 1. Sediment sampling program design based on the predicted distribution of samples using existing sediment chemistry.

Reach of Study Area	n	Probable Distribution of Samples by ERM-Q			
		<0.1	≥0.1 to <0.5	≥0.5 to <1.5	≥1.5
Upper Calcasieu River	2	0.14	0.76	0.42	0.68
Lake Charles	2	0.22	1	0.78	0
Calcasieu River D/S of Lake Charles	2	0	1.6	0.4	0
Clooney Island Loop	4	0.28	2	1.72	0
Clooney Island Loop Barge Slip	2	0	0.4	1.6	0
Calcasieu River Clooney Island to Coon Island	2	0.5	1.5	0	0
Contraband Bayou	6	2.76	2.76	0.42	0
NE Coon Island Loop	3	0	1.08	1.71	0.21
SW Coon Island Loop	6	0	0.96	4.08	0.96
Lower Bayou Verdine	6	0.48	1.38	1.56	2.58
Upper Bayou Verdine	4	0	2.84	0.92	0.24
Upper Bayou d'Inde - UBI 1	3	0.48	1.95	0.57	0
Upper Bayou d'Inde - UBI 4	2	0	0.22	1.22	0.56
Middle Bayou d'Inde - MBI 1	2	0.62	0.76	0.62	0
Middle Bayou d'Inde - MBI 3	3	0.54	1.23	1.23	0
Lower Bayou d'Inde - LBI 1	4	0	0	1.32	2.68
Lower Bayou d'Inde - LBI 3	3	0.39	0	0.99	1.59
Lower Bayou d'Inde - LBI 6	3	0	0	1.89	1.14
Lower Bayou d'Inde - LBI 9	3	0	0	1.89	1.14
Lower Bayou d'Inde - LBI 13	3	0	0	1.71	1.29
Lower Bayou d'Inde - Lower PPG Canal	5	0	0.65	1.25	3.15
Upper Old River D/S of Prien Lake & Prien Lake	4	0.64	3.76	3.12	0.48
Citgo Surge Pond Area	3	0	0.99	0.99	0.99
Moss Lake	3	0	0.87	1.95	0.18
Bayou Olsen	5	2	0	3	0
<hr/>					
Sabine Lake Reference Area ¹					
Johnson Bayou	3	3	0	0	0
Willow Bayou	2	2	0	0	0
Calcasieu Lake Reference Area					
Grand Bayou ²	3	2.64	0.36	0	0
Bayou Bois Connine ²	2	1.76	0.24	0	0
Bayou Choupique ³	5	5	0	0	0
Total	100	23.45	27.31	35.36	17.87

¹Assumed to be <0.1, based on data from E. Long (unpublished data)

²Estimated using average mean ERM-Qs for Calcasieu Lake.

³Estimated using average mean ERM-Qs for Bayou Coupique.

U/S upstream

D/S downstream

PPG Pittsburgh Paint and Glass

Table 2. Identity of samples collected during November 2000 in the Calcasieu ecosystem.

Original Station ID	CDM Station ID	Lab Station ID	Replicate
<i>Upper Calcasieu River U/S of Lake Charles</i>			
UCRA-1	00UC2-ST001-NSD-010	UC2 St001 NSD-A	1
UCRA-1	00UC2-ST001-NSD-010	UC2 St001 NSD-B	2
UCRA-1	00UC2-ST001-NSD-010	UC2 St001 NSD-C	3
UCRA-1	00UC2-ST001-NSD-010	UC2 St001 NSD-D	4
UCRA-1	00UC2-ST001-NSD-010	UC2 St001 NSD-E	5
UCRA-4	00UC2-ST030-NSD-010	UC2 St030 NSD-A	1
UCRA-4	00UC2-ST030-NSD-010	UC2 St030 NSD-B	2
UCRA-4	00UC2-ST030-NSD-010	UC2 St030 NSD-C	3
UCRA-4	00UC2-ST030-NSD-010	UC2 St030 NSD-D	4
UCRA-4	00UC2-ST030-NSD-010	UC2 St030 NSD-E	5
<i>Lake Charles</i>			
LC-1	00UC2-ST003-NSD-010	UC2 St003 NSD-A	1
LC-1	00UC2-ST003-NSD-010	UC2 St003 NSD-B	2
LC-1	00UC2-ST003-NSD-010	UC2 St003 NSD-C	3
LC-1	00UC2-ST003-NSD-010	UC2 St003 NSD-D	4
LC-1	00UC2-ST003-NSD-010	UC2 St003 NSD-E	5
LC-2	00UC2-ST004-NSD-010	UC2 St004 NSD-A	1
LC-2	00UC2-ST004-NSD-010	UC2 St004 NSD-B	2
LC-2	00UC2-ST004-NSD-010	UC2 St004 NSD-C	3
LC-2	00UC2-ST004-NSD-010	UC2 St004 NSD-D	4
LC-2	00UC2-ST004-NSD-010	UC2 St004 NSD-E	5
LC-3	00UC2-ST031-NSD-010	UC2 St031 NSD-A	1
LC-3	00UC2-ST031-NSD-010	UC2 St031 NSD-B	2
LC-3	00UC2-ST031-NSD-010	UC2 St031 NSD-C	3
LC-3	00UC2-ST031-NSD-010	UC2 St031 NSD-D	4
LC-3	00UC2-ST031-NSD-010	UC2 St031 NSD-E	5
<i>Upper Calcasieu River D/S of Lake Charles</i>			
UCRB-1	00UC2-ST005-NSD-010	UC2 St005 NSD-A	1
UCRB-1	00UC2-ST005-NSD-010	UC2 St005 NSD-B	2
UCRB-1	00UC2-ST005-NSD-010	UC2 St005 NSD-C	3
UCRB-1	00UC2-ST005-NSD-010	UC2 St005 NSD-D	4
UCRB-1	00UC2-ST005-NSD-010	UC2 St005 NSD-E	5
<i>Clooney Island Loop</i>			
CIL-1	00UC2-ST007-NSD-010	UC2 St007 NSD-A	1
CIL-1	00UC2-ST007-NSD-010	UC2 St007 NSD-B	2
CIL-1	00UC2-ST007-NSD-010	UC2 St007 NSD-C	3
CIL-1	00UC2-ST007-NSD-010	UC2 St007 NSD-D	4
CIL-1	00UC2-ST007-NSD-010	UC2 St007 NSD-E	5
CIL-2	00UC2-ST008-NSD-010	UC2 St008 NSD-A	1
CIL-2	00UC2-ST008-NSD-010	UC2 St008 NSD-B	2
CIL-2	00UC2-ST008-NSD-010	UC2 St008 NSD-C	3
CIL-2	00UC2-ST008-NSD-010	UC2 St008 NSD-D	4
CIL-2	00UC2-ST008-NSD-010	UC2 St008 NSD-E	5
CIL-4	00UC2-ST010-NSD-010	UC2 St010 NSD-A	1

Table 2. Identity of samples collected during November 2000 in the Calcasieu ecosystem.

Original Station ID	CDM Station ID	Lab Station ID	Replicate
CIL-4	00UC2-ST010-NSD-010	UC2 St010 NSD-B	2
CIL-4	00UC2-ST010-NSD-010	UC2 St010 NSD-C	3
CIL-4	00UC2-ST010-NSD-010	UC2 St010 NSD-D	4
CIL-4	00UC2-ST010-NSD-010	UC2 St010 NSD-E	5
CIL-7	00UC2-ST037-NSD-010	UC2 St037 NSD-A	1
CIL-7	00UC2-ST037-NSD-010	UC2 St037 NSD-B	2
CIL-7	00UC2-ST037-NSD-010	UC2 St037 NSD-C	3
CIL-7	00UC2-ST037-NSD-010	UC2 St037 NSD-D	4
CIL-7	00UC2-ST037-NSD-010	UC2 St037 NSD-E	5
<i>Clooney Island Loop Barge Slip</i>			
CIB-1	00UC2-ST011-NSD-010	UC2 St011 NSD-A	1
CIB-1	00UC2-ST011-NSD-010	UC2 St011 NSD-B	2
CIB-1	00UC2-ST011-NSD-010	UC2 St011 NSD-C	3
CIB-1	00UC2-ST011-NSD-010	UC2 St011 NSD-D	4
CIB-1	00UC2-ST011-NSD-010	UC2 St011 NSD-E	5
CIB-2	00UC2-ST012-NSD-010	UC2 St012 NSD-A	1
CIB-2	00UC2-ST012-NSD-010	UC2 St012 NSD-B	2
CIB-2	00UC2-ST012-NSD-010	UC2 St012 NSD-C	3
CIB-2	00UC2-ST012-NSD-010	UC2 St012 NSD-D	4
CIB-2	00UC2-ST012-NSD-010	UC2 St012 NSD-E	5
<i>Upper Calcasieu River - Clooney Island to Coon Island</i>			
UCRC-1	00UC2-ST013-NSD-010	UC2 St013 NSD-A	1
UCRC-1	00UC2-ST013-NSD-010	UC2 St013 NSD-B	2
UCRC-1	00UC2-ST013-NSD-010	UC2 St013 NSD-C	3
UCRC-1	00UC2-ST013-NSD-010	UC2 St013 NSD-D	4
UCRC-1	00UC2-ST013-NSD-010	UC2 St013 NSD-E	5
UCRC-2	00UC2-ST014-NSD-010	UC2 St014 NSD-A	1
UCRC-2	00UC2-ST014-NSD-010	UC2 St014 NSD-B	2
UCRC-2	00UC2-ST014-NSD-010	UC2 St014 NSD-C	3
UCRC-2	00UC2-ST014-NSD-010	UC2 St014 NSD-D	4
UCRC-2	00UC2-ST014-NSD-010	UC2 St014 NSD-E	5
<i>Contraband Bayou</i>			
CBB-1	00UC2-ST015-NSD-010	UC2 St015 NSD-A	1
CBB-1	00UC2-ST015-NSD-010	UC2 St015 NSD-B	2
CBB-1	00UC2-ST015-NSD-010	UC2 St015 NSD-C	3
CBB-1	00UC2-ST015-NSD-010	UC2 St015 NSD-D	4
CBB-1	00UC2-ST015-NSD-010	UC2 St015 NSD-E	5
CBB-2	00UC2-ST016-NSD-010	UC2 St016 NSD-A	1
CBB-2	00UC2-ST016-NSD-010	UC2 St016 NSD-B	2
CBB-2	00UC2-ST016-NSD-010	UC2 St016 NSD-C	3
CBB-2	00UC2-ST016-NSD-010	UC2 St016 NSD-D	4
CBB-2	00UC2-ST016-NSD-010	UC2 St016 NSD-E	5
CBB-3	00UC2-ST017-NSD-010	UC2 St017 NSD-A	1
CBB-3	00UC2-ST017-NSD-010	UC2 St017 NSD-B	2
CBB-3	00UC2-ST017-NSD-010	UC2 St017 NSD-C	3

Table 2. Identity of samples collected during November 2000 in the Calcasieu ecosystem.

Original Station ID	CDM Station ID	Lab Station ID	Replicate
CBB-3	00UC2-ST017-NSD-010	UC2 St017 NSD-D	4
CBB-3	00UC2-ST017-NSD-010	UC2 St017 NSD-E	5
CBB-4	00UC2-ST018-NSD-010	UC2 St018 NSD-A	1
CBB-4	00UC2-ST018-NSD-010	UC2 St018 NSD-B	2
CBB-4	00UC2-ST018-NSD-010	UC2 St018 NSD-C	3
CBB-4	00UC2-ST018-NSD-010	UC2 St018 NSD-D	4
CBB-4	00UC2-ST018-NSD-010	UC2 St018 NSD-E	5
CBB-5	00UC2-ST019-NSD-010	UC2 St019 NSD-A	1
CBB-5	00UC2-ST019-NSD-010	UC2 St019 NSD-B	2
CBB-5	00UC2-ST019-NSD-010	UC2 St019 NSD-C	3
CBB-5	00UC2-ST019-NSD-010	UC2 St019 NSD-D	4
CBB-5	00UC2-ST019-NSD-010	UC2 St019 NSD-E	5
CBB-6	00UC2-ST020-NSD-010	UC2 St020 NSD-A	1
CBB-6	00UC2-ST020-NSD-010	UC2 St020 NSD-B	2
CBB-6	00UC2-ST020-NSD-010	UC2 St020 NSD-C	3
CBB-6	00UC2-ST020-NSD-010	UC2 St020 NSD-D	4
CBB-6	00UC2-ST020-NSD-010	UC2 St020 NSD-E	5
Coon Island Loop - NE			
CNE-1	00UC2-ST021-NSD-010	UC2 St021 NSD-A	1
CNE-1	00UC2-ST021-NSD-010	UC2 St021 NSD-B	2
CNE-1	00UC2-ST021-NSD-010	UC2 St021 NSD-C	3
CNE-1	00UC2-ST021-NSD-010	UC2 St021 NSD-D	4
CNE-1	00UC2-ST021-NSD-010	UC2 St021 NSD-E	5
CNE-2	00UC2-ST022-NSD-010	UC2 St022 NSD-A	1
CNE-2	00UC2-ST022-NSD-010	UC2 St022 NSD-B	2
CNE-2	00UC2-ST022-NSD-010	UC2 St022 NSD-C	3
CNE-2	00UC2-ST022-NSD-010	UC2 St022 NSD-D	4
CNE-2	00UC2-ST022-NSD-010	UC2 St022 NSD-E	5
CNE-3	00UC2-ST023-NSD-010	UC2 St023 NSD-A	1
CNE-3	00UC2-ST023-NSD-010	UC2 St023 NSD-B	2
CNE-3	00UC2-ST023-NSD-010	UC2 St023 NSD-C	3
CNE-3	00UC2-ST023-NSD-010	UC2 St023 NSD-D	4
CNE-3	00UC2-ST023-NSD-010	UC2 St023 NSD-E	5
Coon Island Loop - SW			
CSW-1	00UC2-ST024-NSD-010	UC2 St024 NSD-A	1
CSW-1	00UC2-ST024-NSD-010	UC2 St024 NSD-B	2
CSW-1	00UC2-ST024-NSD-010	UC2 St024 NSD-C	3
CSW-1	00UC2-ST024-NSD-010	UC2 St024 NSD-D	4
CSW-1	00UC2-ST024-NSD-010	UC2 St024 NSD-E	5
CSW-2	00UC2-ST025-NSD-010	UC2 St025 NSD-A	1
CSW-2	00UC2-ST025-NSD-010	UC2 St025 NSD-B	2
CSW-2	00UC2-ST025-NSD-010	UC2 St025 NSD-C	3
CSW-2	00UC2-ST025-NSD-010	UC2 St025 NSD-D	4
CSW-2	00UC2-ST025-NSD-010	UC2 St025 NSD-E	5
CSW-3	00UC2-ST026-NSD-010	UC2 St026 NSD-A	1
CSW-3	00UC2-ST026-NSD-010	UC2 St026 NSD-B	2

Table 2. Identity of samples collected during November 2000 in the Calcasieu ecosystem.

Original Station ID	CDM Station ID	Lab Station ID	Replicate
CSW-3	00UC2-ST026-NSD-010	UC2 St026 NSD-C	3
CSW-3	00UC2-ST026-NSD-010	UC2 St026 NSD-D	4
CSW-3	00UC2-ST026-NSD-010	UC2 St026 NSD-E	5
CSW-4	00UC2-ST027-NSD-010	UC2 St027 NSD-A	1
CSW-4	00UC2-ST027-NSD-010	UC2 St027 NSD-B	2
CSW-4	00UC2-ST027-NSD-010	UC2 St027 NSD-C	3
CSW-4	00UC2-ST027-NSD-010	UC2 St027 NSD-D	4
CSW-4	00UC2-ST027-NSD-010	UC2 St027 NSD-E	5
CSW-5	00UC2-ST028-NSD-010	UC2 St028 NSD-A	1
CSW-5	00UC2-ST028-NSD-010	UC2 St028 NSD-B	2
CSW-5	00UC2-ST028-NSD-010	UC2 St028 NSD-C	3
CSW-5	00UC2-ST028-NSD-010	UC2 St028 NSD-D	4
CSW-5	00UC2-ST028-NSD-010	UC2 St028 NSD-E	5
CSW-6	00UC2-ST029-NSD-010	UC2 St029 NSD-A	1
CSW-6	00UC2-ST029-NSD-010	UC2 St029 NSD-B	2
CSW-6	00UC2-ST029-NSD-010	UC2 St029 NSD-C	3
CSW-6	00UC2-ST029-NSD-010	UC2 St029 NSD-D	4
CSW-6	00UC2-ST029-NSD-010	UC2 St029 NSD-E	5
Lower Bayou Verdine (D/S of West Ditch)			
LBV-1	00BV2-ST001-NSD-010	BV2 St001 NSD-A	1
LBV-1	00BV2-ST001-NSD-010	BV2 St001 NSD-B	2
LBV-1	00BV2-ST001-NSD-010	BV2 St001 NSD-C	3
LBV-1	00BV2-ST001-NSD-010	BV2 St001 NSD-D	4
LBV-1	00BV2-ST001-NSD-010	BV2 St001 NSD-E	5
LBV-2	00BV2-ST002-NSD-010	BV2 St002 NSD-A	1
LBV-2	00BV2-ST002-NSD-010	BV2 St002 NSD-B	2
LBV-2	00BV2-ST002-NSD-010	BV2 St002 NSD-C	3
LBV-2	00BV2-ST002-NSD-010	BV2 St002 NSD-D	4
LBV-2	00BV2-ST002-NSD-010	BV2 St002 NSD-E	5
LBV-3	00BV2-ST003-NSD-010	BV2 St003 NSD-A	1
LBV-3	00BV2-ST003-NSD-010	BV2 St003 NSD-B	2
LBV-3	00BV2-ST003-NSD-010	BV2 St003 NSD-C	3
LBV-3	00BV2-ST003-NSD-010	BV2 St003 NSD-D	4
LBV-3	00BV2-ST003-NSD-010	BV2 St003 NSD-E	5
LBV-4	00BV2-ST004-NSD-010	BV2 St004 NSD-A	1
LBV-4	00BV2-ST004-NSD-010	BV2 St004 NSD-B	2
LBV-4	00BV2-ST004-NSD-010	BV2 St004 NSD-C	3
LBV-4	00BV2-ST004-NSD-010	BV2 St004 NSD-D	4
LBV-4	00BV2-ST004-NSD-010	BV2 St004 NSD-E	5
LBV-5	00BV2-ST005-NSD-010	BV2 St005 NSD-A	1
LBV-5	00BV2-ST005-NSD-010	BV2 St005 NSD-B	2
LBV-5	00BV2-ST005-NSD-010	BV2 St005 NSD-C	3
LBV-5	00BV2-ST005-NSD-010	BV2 St005 NSD-D	4
LBV-5	00BV2-ST005-NSD-010	BV2 St005 NSD-E	5
LBV-6	00BV2-ST006-NSD-010	BV2 St006 NSD-A	1
LBV-6	00BV2-ST006-NSD-010	BV2 St006 NSD-B	2
LBV-6	00BV2-ST006-NSD-010	BV2 St006 NSD-C	3

Table 2. Identity of samples collected during November 2000 in the Calcasieu ecosystem.

Original Station ID	CDM Station ID	Lab Station ID	Replicate
LBV-6	00BV2-ST006-NSD-010	BV2 St006 NSD-D	4
LBV-6	00BV2-ST006-NSD-010	BV2 St006 NSD-E	5

Table 3. Species list, species data codes, upper-level taxonomic categories (usually family), reference¹ (voucher) collection number, and classification codes used for the Index of Contamination¹.

TAXA CLASS	SPECIS DATA CODE	TAXONOMIC GROUP	INDEX OF CONTAMINATION
ANNELIDA			
Capitella capitata	CAPCAP	Capitellidae (Britton and Morton 1989)	H/H
Galathowenia oculata	GALOCU	Qweniidae (Fauchald 1977)	L/L
Glycinde solitaria	GLYSOL	Goniadidae (Eddy and Hodson 1961)	L/L
Hobsonia florida	HOBFLO	Ampharetidae (Brown et al 2000)	H/M
Hypereteone heteropoda	HYPHET	Phyllodocidae (Brinkhurst 1982)	M/L
Laeonereis culveri	LAECUL	Nereididae (Brown 1987)	M/M
Lumbriculidae	LUMBRC	Lumbriculidae	H/M
Mediomastus ambiseta	MEDAMB	Capitellidae (Bousfield 1991)	H/M
Naididae	NAIDID	Naididae	H/H
Neanthes succinea	NEASUC	Nereididae (Brinkhurst 1981)	M/M
Oligochaeta	OLIGOC	Oligochaeta	N/A
Parandalia americana	PARAME	Pilargidae (Batzer et al 1981)	M/M
Parapriionospio pinnata	PARPIN	Spionidae	H/M
Pectinaria gouldii	PECCOU	Pectinariidae = (Ewing and Dauer 1981)	L/L
Podarkeopsis levifuscina	PODLEV	Hesionidae	M/L
Polydora sp.	POLYDO	Spionidae	M/H
Polydora cornuta	POLCOR	Spionidae (= was P. ligni)	M/H
Polydora socialis	POLSOC	Spionidae	M/H
Serpulidae	SERPUL	Serpulidae	L/L
Spionidae	SPIONI	Spionidae	N/A
Stenoninereis martini	STEMAR	Nereididae (Brinkhurst 1966)	M/M
Streblospio benedicti	STRBEN	Spionidae (Brinkhurst 1986)	H/H
Thalassodrilus bellii	THABEL	Tubificidae	M/H
Tubifex tubifex	TUBTUB	Tubificidae	H/H
Tubificidae	TUBIFI	Tubificidae	H/H
Tubificoides benedeni	TUBBEN	Tubificidae	M/H
ARTHROPODA			
Almyracuma sp.	ALMYRA	Cumacean = (Ewing 1982)	M/L
Araneae (spiders)	ARANEA	Araneae	N/A
Callianassa jamaicense	CALJAM	Callianassidae (Brinkhurst 1986)	H/H
Chironomidae	CHIRON	Chironomidae	H/M
Cirripedia	CIRRIP	Cirripedia	H/M
Coleoptera	COLEOP	Coleoptera	N/A
Corophium lacustre	CORLAC	Corophiidae (Brinkhurst and Baker 1979)	H/H
Corophium louisianum	CORLOU	Corophiidae	H/H
Corophium sp.	COROPH	Corophiidae	H/H
Diptera	DIPTER	Diptera (pupae only)	N/A
Edotea triloba	EDOTRI	Idoteidae (Baker and Brinkhurst 1981)	H/H
Ephemeroptera	EPHEME	Ephemeroptera	N/A
Grandidierella bonnieroides	GRABON	Aoridae (Brinkhurst 1966)	L/L
Hargeria rapax	HARRAP	Tanaidacea (Blake et al 1996)	M/L
Hyalella azteca	HYLAZT	Hyalellidae (Erseus 1992)	M/L
Mysidopsis almyra	MYSALM	Mysids (Cook and Brinkhurst 1973)	M/M
Odonata	ODONAT	Odonata larvae	N/A
Orchestia sp.	ORCHES	Taltridae	L/L
Pinnotheridae	PINNOT	Pinnotheridae	L/L
Rhithropanopeus harrisii	RHIHAR	Xanthidae (Burch 1982)	M/L
Tabanidae	TABANI	Tabanidae	N/A
Taphromysis bowmani	TAPBOW	Mysidae	H/M

Table 3. Species list, species data codes, upper-level taxonomic categories (usually family), reference (voucher) collection number, and classification codes used for the Index of Contamination¹.

TAXA	SPECIS DATA CODE	TAXONOMIC GROUP	INDEX OF CONTAMINATION CLASS
MOLLUSCA			
Amygdalum papyrium	AMYPAP	Mytilidae (Eckelbarger and Grassle 1987)	M/M
Crassostrea virginica	CRAVIR	Ostreidae	M/M
Cyrenoida floridana	CYRFLO	Cyrenoididae	M/M
Geukensia demissa	GEUDEM	Mytilidae (Camp et al 1998)	M/M
Hydrobiidae	HYDROB	Hydrobiidae	H/M
Macoma mitchelli	MACMIT	Tellinidae	H/H
Mytilopsis leucophaeta	MYTLEU	Mytilidae (Coleman and Barnard 1991)	M/L
Physidae	PHYSID	Physidae	N/A
Rangia cuneata	RANCUN	Mactridae (Cunningham et al 1990)	H/M
Tagelus plebeius	TAGPLE	Solecurtidae (Fauchald and Rouse 1997)	L/L
Tellinidae (unidentifiable)	TELLID	Tellinidae	M/M
OTHER TAXA			
Hydrozoa	HYDROZ (colonial; present = 1)		N/A
Nemertean	NEMERT		H/M
Urochordata	UROCHO = likely <i>Molgula manhattensis</i>		M/M

¹Index codes: L/L = low metals, low organics; M/L = moderate metals, low organics; M/H = moderate metals, high organics; M/M = moderate metals, moderate organics; H/M = high metals, moderate organics; H/H = high metals, high organics; N/A = no assignment (lack of data).

Table 4. Summary data for abundance (organisms/0.5 sq meter) and index of contamination (by station).

CDM Station ID	Mean total abundance	Index of Contamination	Annelid abundance		Arthropod abundance		Mollusc abundance		Other abundance	
			Mean	Percent	Mean	Percent	Mean	Percent	Mean	Percent
00UC2-ST001-NSD-010	4.80	11.60	3.60	75.0	0.20	4.2	0.60	12.5	0.40	8.3
00UC2-ST030-NSD-010	3.20	7.00	1.40	43.8	0.00	0.0	1.40	43.8	0.40	12.5
00UC2-ST003-NSD-010	1.20	1.20	1.20	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00UC2-ST004-NSD-010	13.40	20.60	13.20	98.5	0.00	0.0	0.20	1.5	0.00	0.0
00UC2-ST031-NSD-010	8.20	9.00	7.80	95.1	0.00	0.0	0.20	2.4	0.20	2.4
00UC2-ST005-NSD-010	4.60	10.80	2.60	56.5	0.00	0.0	2.00	43.5	0.00	0.0
00UC2-ST007-NSD-010	2.40	5.20	0.60	25.0	0.00	0.0	1.20	50.0	0.60	25.0
00UC2-ST008-NSD-010	2.40	4.80	1.20	50.0	0.20	8.3	2.20	14.5	0.00	0.0
00UC2-ST010-NSD-010	10.60	28.20	9.00	84.9	1.00	9.4	0.60	5.6	0.00	0.0
00UC2-ST037-NSD-010	15.20	48.80	5.80	38.1	6.80	44.7	2.20	14.5	0.40	2.6
00UC2-ST011-NSD-010	14.20	24.60	12.20	85.9	0.60	4.2	1.00	7.0	0.40	2.8
00UC2-ST012-NSD-010	13.40	16.00	12.80	95.5	0.00	0.0	0.40	3.0	0.20	1.5
00UC2-ST013-NSD-010	6.40	18.80	1.80	28.1	1.20	18.8	2.00	31.3	1.40	21.9
00UC2-ST014-NSD-010	22.80	87.00	17.20	75.4	3.00	13.2	2.20	9.6	0.40	1.8
00UC2-ST015-NSD-010	6.00	6.00	6.00	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00UC2-ST016-NSD-010	0.80	0.80	0.80	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00UC2-ST017-NSD-010	0.60	0.60	0.60	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00UC2-ST018-NSD-010	4.60	5.00	4.20	91.3	0.00	0.0	0.20	4.3	0.20	4.3
00UC2-ST019-NSD-010	1.20	1.60	0.80	66.7	0.00	0.0	0.40	33.3	0.00	0.0
00UC2-ST020-NSD-010	2.80	5.40	2.60	92.9	0.00	0.0	0.00	0.0	0.20	7.1
00UC2-ST021-NSD-010	12.40	19.60	8.80	71.0	0.60	4.8	2.80	22.6	0.20	1.6
00UC2-ST022-NSD-010	6.20	10.80	2.20	35.5	0.00	0.0	4.00	64.5	0.00	0.0
00UC2-ST023-NSD-010	6.80	11.60	4.60	67.7	0.20	2.9	1.80	26.5	0.20	2.9
00UC2-ST024-NSD-010	5.00	11.00	3.00	60.0	1.60	32.0	0.20	4.0	0.20	4.0
00UC2-ST025-NSD-010	8.80	35.60	2.80	31.8	5.00	56.8	0.60	6.8	0.40	4.5
00UC2-ST026-NSD-010	11.20	25.00	5.20	46.4	1.80	16.1	3.60	32.1	0.60	5.4
00UC2-ST027-NSD-010	9.40	19.20	8.60	91.5	0.00	0.0	0.80	8.5	0.00	0.0
00UC2-ST028-NSD-010	0.60	0.60	0.60	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00UC2-ST029-NSD-010	2.40	5.60	1.20	50.0	0.00	0.0	0.80	33.3	0.40	16.7
00BV2-ST001-NSD-010	10.60	15.60	8.00	75.5	0.80	7.6	1.60	15.1	0.20	1.9
00BV2-ST002-NSD-010	7.60	11.80	6.40	84.2	0.20	2.6	0.80	10.5	0.20	2.6
00BV2-ST003-NSD-010	6.80	10.20	6.80	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00BV2-ST004-NSD-010	0.60	1.20	0.40	66.7	0.20	33.3	0.00	0.0	0.00	0.0

Table 4. Summary data for abundance (organisms/0.5 sq meter) and index of contamination (by station).

CDM Station ID	Mean total abundance	Index of Contamination	Annelid abundance		Arthropod abundance		Mollusc abundance		Other abundance	
			Mean	Percent	Mean	Percent	Mean	Percent	Mean	Percent
00BV2-ST005-NSD-010	2.20	3.40	2.20	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00BV2-ST006-NSD-010	3.80	6.20	3.40	89.5	0.20	5.3	0.00	0.0	0.20	5.3
00BV2-ST007-NSD-010	8.00	20.20	5.60	70.0	1.40	17.5	1.00	12.5	0.00	0.0
00BV2-ST008-NSD-010	4.80	7.00	4.80	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00BV2-ST009-NSD-010	13.00	23.00	8.60	66.2	4.40	33.9	0.00	0.0	0.00	0.0
00BV2-ST010-NSD-010	6.00	13.40	5.80	96.7	0.00	0.0	0.20	3.3	0.00	0.0
00BI2-ST001-NSD-010	1.00	1.20	0.00	0.0	1.00	100.0	0.00	0.0	0.00	0.0
00BI2-ST002-NSD-010	0.40	0.80	0.00	0.0	0.40	100.0	0.00	0.0	0.00	0.0
00BI2-ST003-NSD-010	0.20	0.40	0.00	0.0	0.20	100.0	0.00	0.0	0.00	0.0
00BI2-ST004-NSD-010	4.80	4.80	4.80	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00BI2-ST005-NSD-010	11.20	11.40	11.00	98.2	0.00	0.0	0.00	0.0	0.20	1.8
00BI2-ST005-2NSD-010	0.40	0.40	0.40	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00BI2-ST006-NSD-010	3.20	5.20	2.00	62.5	0.40	12.5	0.00	0.0	0.80	25.0
00BI2-ST007-NSD-010	3.80	3.80	3.80	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00BI2-ST008-NSD-010	1.27	3.40	2.60	86.7	0.40	13.3	0.00	0.0	0.00	0.0
00BI2-ST010-NSD-010	0.60	0.60	0.60	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00BI2-ST041-NSD-010	0.20	0.20	0.20	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00BI2-ST011-NSD-010	0.40	0.40	0.00	0.0	0.00	0.0	0.20	50.0	0.20	50.0
00BI2-ST012-NSD-010	0.80	1.40	0.80	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00BI2-ST013-NSD-010	4.00	4.40	3.80	95.0	0.00	0.0	0.00	0.0	0.20	5.0
00BI2-ST014-NSD-010	0.60	0.60	0.60	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00BI2-ST015-NSD-010	1.80	2.60	1.20	66.7	0.00	0.0	0.00	0.0	0.60	33.3
00BI2-ST016-NSD-010	0.60	0.60	0.60	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00BI2-ST017-NSD-010	0.20	0.20	0.20	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00BI2-ST018-NSD-010	0.80	0.80	0.80	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00BI2-ST019-NSD-010	3.40	3.60	3.20	94.1	0.00	0.0	0.00	0.0	0.20	5.9
00BI2-ST020-NSD-010	2.00	2.00	2.00	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00BI2-ST021-NSD-010	30.20	130.00	15.40	51.0	9.60	31.8	5.00	16.6	0.20	0.7
00BI2-ST022-NSD-010	9.40	15.40	8.40	89.4	0.40	4.3	0.60	6.4	0.00	0.0
00BI2-ST023-NSD-010	4.00	9.80	3.20	80.0	0.60	15.0	0.20	5.0	0.00	0.0
00BI2-ST024-NSD-010	2.00	4.20	0.80	40.0	0.60	30.0	0.20	10.0	0.40	20.0
00BI2-ST025-NSD-010	1.80	1.80	1.20	66.7	0.20	11.1	0.00	0.0	0.40	22.2
00BI2-ST026-NSD-010	3.40	7.80	2.40	70.6	0.00	0.0	0.40	11.8	0.60	17.6

Table 4. Summary data for abundance (organisms/0.5 sq meter) and index of contamination (by station).

CDM Station ID	Mean total abundance	Index of Contamination	Annelid abundance		Arthropod abundance		Mollusc abundance		Other abundance	
			Mean	Percent	Mean	Percent	Mean	Percent	Mean	Percent
00BI2-ST027-NSD-010	0.00	0.00	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.0
00BI2-ST028-NSD-010	0.40	0.40	0.40	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00BI2-ST029-NSD-010	0.80	0.80	0.80	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00BI2-ST030-NSD-010	1.80	1.80	1.80	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00BI2-ST031-NSD-010	2.40	2.80	2.00	83.3	0.00	0.0	0.00	0.0	0.40	16.7
00LC2-ST001-NSD-010	6.80	13.60	4.80	70.6	0.20	2.9	1.00	14.7	0.80	11.8
00LC2-ST002-NSD-010	23.80	79.80	7.00	29.4	12.00	50.4	3.20	13.4	1.60	6.7
00LC2-ST003-NSD-010	28.40	48.20	24.80	87.3	0.80	2.8	2.00	7.0	0.80	2.8
00LC2-ST004-NSD-010	3.60	6.60	2.00	55.6	0.60	16.7	1.00	27.8	0.00	0.0
00LC2-ST005-NSD-010	0.40	1.60	0.40	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00LC2-ST006-NSD-010	1.20	2.00	1.00	83.3	0.00	0.0	0.00	0.0	0.20	16.7
00LC2-ST007-NSD-010	3.80	4.00	3.80	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00LC2-ST008-NSD-010	2.20	4.80	1.40	63.6	0.20	9.1	0.00	0.0	0.60	27.3
00LC2-ST009-NSD-010	4.20	6.40	3.40	81.0	0.60	14.3	0.00	0.0	0.20	4.8
00LC2-ST010-NSD-010	4.80	5.60	4.20	87.5	0.60	12.5	0.00	0.0	0.00	0.0
00LC2-ST011-NSD-010	1.40	1.80	1.20	85.7	0.00	0.0	0.00	0.0	0.20	14.3
00LC2-ST012-NSD-010	9.00	9.00	9.00	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00LC2-ST013-NSD-010	29.00	52.20	28.40	97.9	0.00	0.0	0.20	0.7	0.40	1.4
00LC2-ST014-NSD-010	10.60	24.00	4.60	43.4	6.00	56.6	0.00	0.0	0.00	0.0
00LC2-ST027-NSD-010	27.20	46.00	26.80	98.5	0.20	0.7	0.00	0.0	0.20	0.7
00SN2-ST001-NSD-010	5.20	12.60	5.20	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00SN2-ST002-NSD-010	10.20	20.40	9.60	94.1	0.20	2.0	0.00	0.0	0.40	3.9
00SN2-ST003-NSD-010	30.60	57.80	25.00	81.7	4.80	15.7	0.60	2.0	0.20	0.7
00SN2-ST004-NSD-010	9.20	24.60	7.20	78.3	0.60	6.5	0.20	2.2	1.20	13.0
00SN2-ST005-NSD-010	16.60	33.00	8.80	53.0	5.40	32.5	0.40	2.4	2.00	12.0
00SN2-ST006-NSD-010	0.40	0.40	0.40	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00SN2-ST035-NSD-010	3.80	4.80	3.40	89.5	0.40	10.5	0.00	0.0	0.00	0.0
00SN2-ST008-NSD-010	0.80	0.80	0.80	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00SN2-ST009-NSD-010	2.00	2.40	1.60	80.0	0.00	0.0	0.20	10.0	0.20	10.0
00SN2-ST038-NSD-010	0.20	0.20	0.20	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00SN2-ST011-NSD-010	16.80	17.20	16.80	100.0	0.00	0.0	0.00	0.0	0.00	0.0
00SN2-ST012-NSD-010	14.00	18.40	13.60	97.1	0.00	0.0	0.40	2.9	0.00	0.0
00SN2-ST013-NSD-010	2.60	4.80	1.00	38.5	0.60	23.1	0.20	7.7	0.80	30.8

Table 4. Summary data for abundance (organisms/0.5 sq meter) and index of contamination (by station).

CDM Station ID	Mean total abundance	Index of Contamination	Annelid abundance		Arthropod abundance		Mollusc abundance		Other abundance	
			Mean	Percent	Mean	Percent	Mean	Percent	Mean	Percent
00SN2-ST014-NSD-010	24.60	39.40	23.80	96.8	0.00	0.0	0.60	2.4	0.20	0.8
00SN2-ST015-NSD-010	22.40	34.20	20.60	92.0	0.20	0.9	0.80	3.6	0.80	3.6
Totals (means)	681.60		530.20		76.60		52.40		22.40	
Totals in 5 replicates	3408.00		2651.00	77.8	383.00	11.2	262.00	7.7	112.00	3.3

Table 5. Summary data by region and overall (organisms/0.5 sq meters).

Upper Calcasieu River U/S of Lake Charles

Station	Mean	SD
00UC2-ST001-NSD-010	4.80	2.86
00UC2-ST030-NSD-010	3.20	1.30

Index	Means	%	Index value
L/L	0.00	0.00	0.00
M/L	0.00	0.00	0.00
M/M	1.00	25.00	4.00
M/H	0.10	2.50	0.30
H/M	2.10	52.50	4.20
H/H	0.80	20.00	0.80
Site Totals =	4.00	100.00	9.30

Lake Charles

Station	Mean	SD
00UC2-ST003-NSD-010	1.20	1.30
00UC2-ST004-NSD-010	13.40	3.05
00UC2-ST031-NSD-010	8.20	4.38

Index	Means	%	Index value
L/L	0.00	0.00	0.00
M/L	0.00	0.00	0.00
M/M	0.27	3.51	1.07
M/H	0.00	0.00	0.00
H/M	1.87	24.56	3.73
H/H	5.47	71.93	5.47
Site Totals =	7.60	100.00	10.27

Upper Calcasieu River D/S of Lake Charles

Station	Mean	SD
00UC2-ST005-NSD-010	4.60	1.82

Index	Means	%	Index value
L/L	0.00	0.00	0.00
M/L	0.00	0.00	0.00
M/M	1.20	26.09	4.80
M/H	0.00	0.00	0.00
H/M	2.60	56.52	5.20
H/H	0.80	17.39	0.80
Site Totals =	4.60	100.00	10.80

Clooney Island Loop

Station	Mean	SD
00UC2-ST007-NSD-010	2.40	1.82
00UC2-ST008-NSD-010	2.40	1.52
00UC2-ST010-NSD-010	10.60	10.29
00UC2-ST037-NSD-010	15.20	5.89

Index	Means	%	Index value
L/L	0.20	2.61	1.20
M/L	1.40	18.30	7.00
M/M	1.45	18.95	5.80
M/H	0.10	1.31	0.30
H/M	2.95	38.56	5.90
H/H	1.55	20.26	1.55
Site Totals =	7.65	100.00	21.75

Table 5. Summary data by region and overall (organisms/0.5 sq meters).

Clooney Island Loop Barge Slip

Station	Mean	SD
00UC2-ST011-NSD-010	14.20	3.77
00UC2-ST012-NSD-010	13.40	4.39

Index	Means	%	Index value
L/L	0.00	0.00	0.00
M/L	0.00	0.00	0.00
M/M	0.80	5.84	3.20
M/H	0.20	1.46	0.60
H/M	3.80	27.74	7.60
H/H	8.90	64.96	8.90
Site Totals =	13.70	100.00	20.30

Upper Calcasieu River - Clooney Island to Coon Island

Station	Mean	SD
00UC2-ST013-NSD-010	6.40	2.07
00UC2-ST014-NSD-010	22.80	9.09

Index	Means	%	Index value
L/L	4.20	28.77	25.20
M/L	2.00	13.70	10.00
M/M	1.50	10.27	6.00
M/H	0.20	1.37	0.60
H/M	4.40	30.14	8.80
H/H	2.30	15.75	2.30
Site Totals =	14.60	100.00	52.90

Contraband Bayou

Station	Mean	SD
00UC2-ST015-NSD-010	6.00	4.36
00UC2-ST016-NSD-010	0.80	1.30
00UC2-ST017-NSD-010	0.60	0.89
00UC2-ST018-NSD-010	4.60	3.21
00UC2-ST019-NSD-010	1.20	1.10
00UC2-ST020-NSD-010	2.80	3.56

Index	Means	%	Index value
L/L	0.00	0.00	0.00
M/L	0.00	0.00	0.00
M/M	0.13	5.00	0.53
M/H	0.00	0.00	0.00
H/M	0.17	6.25	0.33
H/H	2.37	88.74	2.37
Site Totals =	2.67	99.99	3.23

Coon Island Loop - NE

Station	Mean	SD
00UC2-ST021-NSD-010	12.40	4.72
00UC2-ST022-NSD-010	6.20	1.48
00UC2-ST023-NSD-010	6.80	4.44

Index	Means	%	Index value
L/L	0.00	0.00	0.00
M/L	0.20	2.38	1.00
M/M	0.40	4.76	1.60
M/H	0.00	0.00	0.00
H/M	3.60	42.86	7.20
H/H	4.20	50.00	4.20
Site Totals =	8.40	100.00	14.00

Table 5. Summary data by region and overall (organisms/0.5 sq meters).

Coon Island Loop - SW

Station	Mean	SD
00UC2-ST024-NSD-010	5.00	5.39
00UC2-ST025-NSD-010	8.80	4.92
00UC2-ST026-NSD-010	11.20	4.97
00UC2-ST027-NSD-010	9.40	2.70
00UC2-ST028-NSD-010	0.60	1.60
00UC2-ST029-NSD-010	2.40	1.82

Index	Means	%	Index value
L/L	0.23	3.75	1.40
M/L	1.10	17.66	5.50
M/M	0.60	9.63	2.40
M/H	0.00	0.00	0.00
H/M	2.57	41.20	5.13
H/H	1.73	27.82	1.73
Site Totals =	6.23	100.05	16.17

Lower Bayou Verdine (D/S of West Ditch)

Station	Mean	SD
00BV2-ST001-NSD-010	10.60	2.97
00BV2-ST002-NSD-010	7.60	2.61
00BV2-ST003-NSD-010	6.80	1.92
00BV2-ST004-NSD-010	0.60	0.89
00BV2-ST005-NSD-010	2.20	2.77
00BV2-ST006-NSD-010	3.80	2.95

Index	Means	%	Index value
L/L	0.13	2.55	0.80
M/L	0.00	0.00	0.00
M/M	0.40	7.65	1.60
M/H	0.00	0.00	0.00
H/M	0.97	18.48	1.93
H/H	3.73	71.38	3.73
Site Totals =	5.23	100.06	8.07

Upper Bayou Verdine (U/S West Ditch)

Station	Mean	SD
00BV2-ST007-NSD-010	8.00	6.12
00BV2-ST008-NSD-010	4.80	4.15
00BV2-ST009-NSD-010	13.00	9.35
00BV2-ST010-NSD-010	6.00	5.39

Index	Means	%	Index value
L/L	0.00	0.00	0.00
M/L	0.20	2.67	1.00
M/M	0.30	4.00	1.20
M/H	2.40	32.00	7.20
H/M	1.90	25.33	3.80
H/H	2.70	36.00	2.70
Site Totals =	7.50	100.00	15.90

Upper Bayou d'Inde - UBI 1

Station	Mean	SD
00BI2-ST001-NSD-010	1.00	1.73
00BI2-ST002-NSD-010	0.40	0.55
00BI2-ST003-NSD-010	0.20	0.45

Index	Means	%	Index value
L/L	0.00	0.00	0.00
M/L	0.00	0.00	0.00
M/M	0.00	0.00	0.00
M/H	0.00	0.00	0.00
H/M	0.40	100.00	0.80
H/H	0.00	0.00	0.00
Site Totals =	0.40	100.00	0.80

Table 5. Summary data by region and overall (organisms/0.5 sq meters).

Upper Bayou d'Inde - UBI 4

Station	Mean	SD	Index	Means	%	Index value
00BI2-ST004-NSD-010	4.80	2.77	L/L	0.00	0.00	0.00
			M/L	0.00	0.00	0.00
			M/M	0.00	0.00	0.00
			M/H	0.00	0.00	0.00
			H/M	0.00	0.00	0.00
			H/H	4.80	100.00	4.80
			Site Totals =	4.80	100.00	4.80

Upper Bayou d'Inde - UBI 5

Station	Mean	SD	Index	Means	%	Index value
00BI2-ST005-NSD-010	11.20	10.21	L/L	0.00	0.00	0.00
00BI2-ST005-2NSD-010	0.40	0.55	M/L	0.00	0.00	0.00
			M/M	0.00	0.00	0.00
			M/H	0.00	0.00	0.00
			H/M	0.10	1.72	0.20
			H/H	5.70	98.28	5.70
			Site Totals =	5.80	100.00	5.90

Middle Bayou d'Inde - MBI 1

Station	Mean	SD	Index	Means	%	Index value
00BI2-ST006-NSD-010	3.20	2.77	L/L	0.00	0.00	0.00
00BI2-ST007-NSD-010	3.80	2.59	M/L	0.10	2.94	0.50
			M/M	0.00	0.00	0.00
			M/H	0.20	5.88	0.60
			H/M	0.30	8.82	0.60
			H/H	2.80	82.35	2.80
			Site Totals =	3.40	100.00	4.50

Middle Bayou d'Inde - MBI 3

Station	Mean	SD	Index	Means	%	Index value
00BI2-ST008-NSD-010	1.27	2.40	L/L	0.00	0.00	0.00
00BI2-ST010-NSD-010	0.60	0.89	M/L	0.00	0.00	0.00
00BI2-ST041-NSD-010	0.20	0.45	M/M	0.00	0.00	0.00
			M/H	0.00	0.00	0.00
			H/M	0.13	10.50	0.27
			H/H	1.13	89.24	1.13
			Site Totals =	1.27	99.74	1.40

Table 5. Summary data by region and overall (organisms/0.5 sq meters).

Lower Bayou d'Inde - LBI 1

Station	Mean	SD
00BI2-ST011-NSD-010	0.40	0.55
00BI2-ST012-NSD-010	0.80	1.79
00BI2-ST013-NSD-010	4.00	2.45
00BI2-ST014-NSD-010	0.60	0.89

Index	Means	%	Index value
L/L	0.00	0.00	0.00
M/L	0.00	0.00	0.00
M/M	0.05	3.57	0.20
M/H	0.00	0.00	0.00
H/M	0.15	10.71	0.30
H/H	1.20	85.71	1.20
Site Totals =	1.40	100.00	1.70

Lower Bayou d'Inde - LBI 3

Station	Mean	SD
00BI2-ST015-NSD-010	1.80	1.48
00BI2-ST016-NSD-010	0.60	1.34
00BI2-ST017-NSD-010	0.20	0.45

Index	Means	%	Index value
L/L	0.00	0.00	0.00
M/L	0.00	0.00	0.00
M/M	0.00	0.00	0.00
M/H	0.00	0.00	0.00
H/M	0.27	30.65	0.53
H/H	0.60	68.97	0.60
Site Totals =	0.87	99.62	1.13

Lower Bayou d'Inde - LBI 6

Station	Mean	SD
00BI2-ST018-NSD-010	0.00	0.00
00BI2-ST019-NSD-010	0.00	0.00
00BI2-ST020-NSD-010	0.00	0.00

Index	Means	%	Index value
L/L	0.00	0.00	0.00
M/L	0.00	0.00	0.00
M/M	0.00	0.00	0.00
M/H	0.00	0.00	0.00
H/M	0.00	0.00	0.00
H/H	0.00	0.00	0.00
Site Totals =	0.00	0.00	0.00

Lower Bayou d'Inde - LBI 9

Station	Mean	SD
00BI2-ST021-NSD-010	30.20	13.50
00BI2-ST022-NSD-010	9.40	1.34
00BI2-ST023-NSD-010	4.00	2.55

Index	Means	%	Index value
L/L	4.07	27.99	24.40
M/L	3.07	21.11	15.33
M/M	1.07	7.34	4.27
M/H	0.00	0.00	0.00
H/M	1.40	9.64	2.80
H/H	4.93	33.95	4.93
Site Totals =	14.53	100.02	51.73

Table 5. Summary data by region and overall (organisms/0.5 sq meters).

Lower Bayou d'Inde - LBI 13

Station	Mean	SD	Index	Means	%	Index value
00BI2-ST024-NSD-010	2.00	2.92	L/L	0.00	0.00	0.00
00BI2-ST025-NSD-010	1.80	1.64	M/L	0.07	2.86	0.33
00BI2-ST026-NSD-010	3.40	1.95	M/M	0.20	8.58	0.80
			M/H	0.27	11.44	0.80
			H/M	0.87	37.20	1.73
			H/H	0.93	40.06	0.93
			Site Totals =	2.33	100.14	4.60

Lower Bayou d'Inde - Lower PPG Canal

Station	Mean	SD	Index	Means	%	Index value
00BI2-ST027-NSD-010	0.00	0.00	L/L	0.00	0.00	0.00
00BI2-ST028-NSD-010	0.40	0.89	M/L	0.00	0.00	0.00
00BI2-ST029-NSD-010	0.80	1.30	M/M	0.00	0.00	0.00
00BI2-ST030-NSD-010	1.80	2.05	M/H	0.00	0.00	0.00
00BI2-ST031-NSD-010	2.40	3.36	H/M	0.08	7.41	0.16
			H/H	0.84	77.78	0.84
			Site Totals =	0.92	85.19	1.00

Prien Lake and Upper old river D/S of Prien Lake

Station	Mean	SD	Index	Means	%	Index value
00LC2-ST001-NSD-010	6.80	4.44	L/L	0.05	0.32	0.30
00LC2-ST002-NSD-010	23.80	15.45	M/L	2.90	18.53	14.50
00LC2-ST003-NSD-010	28.40	11.59	M/M	0.80	5.11	3.20
00LC2-ST004-NSD-010	3.60	2.07	M/H	0.15	0.96	0.45
			H/M	6.85	43.77	13.70
			H/H	4.90	31.31	4.90
			Site Totals =	15.65	100.00	37.05

Middle Calcasieu River (Citgo Surge Pond Area)

Station	Mean	SD	Indicators	Means	%	Index value
00LC2-ST005-NSD-010	0.40	0.55	L/L	0.00	0.00	0.00
00LC2-ST006-NSD-010	1.20	1.10	M/L	0.00	0.00	0.00
00LC2-ST007-NSD-010	3.80	2.17	M/M	0.20	11.11	0.80
			M/H	0.00	0.00	0.00
			H/M	0.13	7.41	0.27
			H/H	1.47	81.48	1.47
			Site Totals =	1.80	100.00	2.53

Table 5. Summary data by region and overall (organisms/0.5 sq meters).

Bayou Olsen

Station	Mean	SD
00LC2-ST008-NSD-010	2.20	1.79
00LC2-ST009-NSD-010	4.20	2.59
00LC2-ST010-NSD-010	4.80	2.68
00LC2-ST011-NSD-010	1.40	2.19
00LC2-ST012-NSD-010	9.00	4.95

Index	Means	%	Index value
L/L	0.00	0.00	0.00
M/L	0.08	1.85	0.40
M/M	0.08	1.85	0.32
M/H	0.00	0.00	0.00
H/M	0.64	14.81	1.28
H/H	3.52	81.48	3.52

Site Totals = 4.32 100.00 5.52

Moss Lake

Station	Mean	SD
00LC2-ST013-NSD-010	29.00	4.64
00LC2-ST014-NSD-010	10.60	6.58
00LC2-ST027-NSD-010	27.20	15.53

Index	Means	%	Index value
L/L	0.07	0.30	0.40
M/L	1.00	4.49	5.00
M/M	0.27	1.20	1.07
M/H	0.13	0.60	0.40
H/M	13.47	60.47	26.93
H/H	7.33	32.93	7.33

Site Totals = 22.27 99.99 41.13

Willow Bayou - Reference

Station	Mean	SD
00SN2-ST001-NSD-010	5.20	3.96
00SN2-ST002-NSD-010	10.20	7.29

Index	Means	%	Index value
L/L	0.20	2.60	1.20
M/L	0.00	0.00	0.00
M/M	1.70	22.08	6.80
M/H	0.50	6.49	1.50
H/M	1.70	22.08	3.40
H/H	3.60	46.75	3.60

Site Totals = 7.70 100.00 16.50

Johnson Bayou - Reference

Station	Mean	SD
00SN2-ST003-NSD-010	30.60	12.26
00SN2-ST004-NSD-010	9.20	7.60
00SN2-ST005-NSD-010	16.60	8.91

Index	Means	%	Index value
L/L	1.33	7.09	8.00
M/L	0.40	2.13	2.00
M/M	0.67	3.55	2.67
M/H	0.07	0.35	0.20
H/M	9.27	49.29	18.53
H/H	7.07	37.59	7.07

Site Totals = 18.80 100.00 38.47

Table 5. Summary data by region and overall (organisms/0.5 sq meters).

Bayou Bois Connine - Reference

Station	Mean	SD
00SN2-ST006-NSD-010	0.40	0.55
00SN2-ST035-NSD-010	3.80	3.03

Index	Means	%	Index value
L/L	0.00	0.00	0.00
M/L	0.10	4.76	0.50
M/M	0.00	0.00	0.00
M/H	0.00	0.00	0.00
H/M	0.10	4.76	0.20
H/H	1.90	90.48	1.90
Site Totals =	2.10	100.00	2.60

Grand Bayou - Reference

Station	Mean	SD
00SN2-ST008-NSD-010	0.80	0.84
00SN2-ST009-NSD-010	2.00	1.22
00SN2-ST038-NSD-010	0.20	0.45

Index	Means	%	Index value
L/L	0.00	0.00	0.00
M/L	0.00	0.00	0.00
M/M	0.00	0.00	0.00
M/H	0.00	0.00	0.00
H/M	0.13	13.33	0.27
H/H	0.87	86.67	0.87
Site Totals =	1.00	100.00	1.13

Bayou Choupique - Reference

Station	Mean	SD
00SN2-ST011-NSD-010	16.80	10.16
00SN2-ST012-NSD-010	14.00	6.96
00SN2-ST013-NSD-010	2.60	1.14
00SN2-ST014-NSD-010	24.60	5.13
00SN2-ST015-NSD-010	22.40	8.14

Index	Means	%	Index value
L/L	0.00	0.00	0.00
M/L	0.04	0.25	0.20
M/M	0.24	1.49	0.96
M/H	0.04	0.25	0.12
H/M	5.76	35.82	11.52
H/H	10.00	62.19	10.00
Site Totals =	16.08	100.00	22.80

TOTALS FOR THE STUDY:

Total Annelida:	2651
Total Arthropoda:	383
Total Molusca:	262
Total Other:	112
All Taxa:	3408

Index	Indicators	Index %
L/L	2.46	9.34
M/L	1.30	4.93
M/M	1.14	4.34
M/H	0.43	1.63
H/M	6.10	23.19
H/H	20.88	79.37
N/A	0.11	
Index Total	32.31	

APPENDIX 2
TAXONOMIC GUIDES AND REFERENCES

TAXONOMIC GUIDES AND REFERENCES USED FOR LABORATORY IDENTIFICATION OF CALCASIEU ESTUARY MACROINVERTEBRATES

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